

Amendments to the Drawings:

The attached sheets of drawings include changes to Figs. 1-13. The changes to Figs. 1-13 include the cancellation of Figs. 3, 4 and 11, and the deletion of PCT headings (e.g. 1/13, 2/13, ..., and 13/13). Fig. 2 has been changed to merge in portions of original Fig. 3. Fig. 9 has been changed to merge in portions of original Fig. 11. Original Figs. 5-9, 12 and 13 have been relabeled Figs. 3-7, 9 and 10, respectively. Original Figs. 10A and 10B have been relabeled Figs. 8A and 8B, respectively.

Attachments:

Replacement Sheets for Figs. 1-10

Annotated Sheets Showing Changes to Figs. 1-13

REMARKS

By the present invention, Claims 1 has been amended. Claims 1-3 remain pending in the present application. Claim 1 is the sole independent claim.

Applicants respectfully submit that the amendments to the specification, claims and drawings are fully supported by the original disclosure, and introduce no new matter therewith. Applicants respectfully request reconsideration and allowance in view of the foregoing amendments and the following remarks.

Claim Objections

1. Claims 1-3 are objected to because of informalities. In particular, the Office indicated that Claim 1 appears to be referring to the embodiment shown in Fig. 3, but it is not clear where the slit and the planar waveguide on a substrate are located. The Office also indicated that is not clear whether the waveguide 91 and substrate 92 are part of the insertion plate or part of the substrate having a slit.

Applicants have amended Figs. 1-13 by deleting Figs. 3, 4 and 11, deleting the PCT headings (e.g. 1/13, 2/13,..., 13/13), amending Fig. 2 to include merge in portions of original Fig. 3, and amending Fig. 9 to include portions of original Fig. 11. Original Figs. 5-9, 12 and 13 have been relabeled Figs. 3-7, 9 and 10, respectively, and original Figs. 10A and 10B have been relabeled Figs. 8A and 8B, respectively.

Applicants respectfully submit that the changes to Figs. 1-13 are fully supported by the original disclosure, and introduce no new matter therewith. Original Fig. 3 was a schematic diagram including a configuration of original Fig. 2 of the present invention. In original Fig. 3, slit section S, a cantilever 85, an insertion plate M, and an electric wiring 86 are omitted in order to make the drawing simple. That is, in original Fig. 3, the slit section S (not shown in original Fig. 3) is formed on an optical waveguide 91, and the planar waveguide is the optical waveguide 91.

Here, in original Figs. 2 and 3, a substrate 81 corresponds to a supporting substrate 92, and an optical waveguide including a cladding layer 82, an input fiber side optical waveguide core 83a, an output fiber side optical waveguide core 83b, a cladding layer 84, and the slit section S corresponds to the optical waveguide 91. An MEMS holding region 93 corresponds to a region accommodating the cantilever 85 as an insertion plate driving mechanism (MEMS) (see page 11, lines 16-17 of the specification). That is, the MEMS holding region 93 is a space including the cantilever. The cantilever 85 as MEMS is supported to an MEMS supporting substrate 94 shown in Fig. 3. As shown in original Fig. 3, a magnet 95 is placed on the MEMS supporting substrate 94. The magnet B generates a magnet field B shown in Fig. 2.

To make clear the configuration of original Fig. 3, Fig. 2 is amended so that original Fig. 3 merges into Fig. 2, and original Fig. 3 is canceled. In addition, original Fig. 4 is also canceled according to the cancellation of original Fig. 3. Since as above-mentioned, original Figs. 2 and 3 are closely concerned, and each component of original Figs. 2 and 3 have the

correspondence relation, this amendment to Fig. 2 is not an amendment including new matter. Since Figs. 9 and 11 also have the same relating which Figs. 2 and 3 have, original Fig. 11 is canceled, and Fig. 9 is amended like amended Fig. 2.

Applicants respectfully submit that this objection is overcome and requests withdrawal of this objection.

Rejection Based on Haeberle et al.

2. Claims 1-3 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Haeberle et al. (U.S. Patent No. US 6,628,452 B2). Applicants respectfully traverse this rejection.

Amended independent Claim 1 recites an optical device having at least one slit at a desired location of a polygonal planar optical waveguide formed on a substrate, and carrying out optical path switching of signal light or control of quantity of light of an optical beam by moving an insertion plate up and down in the slit. The optical device includes flat insertion plate holding means for holding the insertion plate, an electric wiring formed on the insertion plate holding means, and a flat magnet placed in a manner that the magnet faces a surface of the insertion plate holding means opposite to a surface facing the optical waveguide, the magnet being placed so that a magnetic field is applied to at least one part of the electric wiring. Lorentz force caused by interaction between current flowing through the electric wiring and magnetic field generated by the magnet formed separately from the insertion plate displaces the insertion plate holding means to drive the insertion plate.

In contrast, Haeberle et al. discloses that a recess 140 is formed on a wave guide 21, and an optical switching device has a cantilever 130 to hold a silicon blade 120. In addition, on the cantilever 130, a layer 190 of material having a different coefficient of thermal expansion to the cantilever 130, or a layer 210 of a piezoelectric material are formed. In Haeberle et al., when the layer 190 is formed on the cantilever 130, a flow of current through the cantilever 130 causes the cantilever 130 to bend using a difference of coefficient of thermal expansion between the cantilever 130 and the layer 190. On the other hand, when layer 210 is formed on the cantilever 130, the cantilever 130 is bended in response to a voltage applied through the associated row and column conductors 40 and 50.

The Office says that the layer 210 in Fig. 9 of Haeberle et al. is the electrical wiring of the present invention of Claim 1. However, the layer 210 which is the piezoelectric material is bent in response to the voltage applied through the associated row and column conductors 40 and 50, thus the bend of the layer causes the cantilever 130 to bend. Accordingly, the layer 210 is not the electric wiring. Further, Haeberle et al. does not disclose that the electric wiring is formed on the cantilever to generate Lorentz force.

Haeberle et al. also does not disclose that the magnet is placed so that the magnetic field is applied to the electric wiring. Accordingly, Haeberle et al. does not disclose that Lorentz force caused by interaction between current flowing through the electric wiring and magnetic field generated by the magnet formed separately from the insertion plate displaces the cantilever to drive the insertion plate.

Therefore, the present invention of Claim 1 is allowable over Haeberle et al. which does not disclose the above-mentioned features of the present invention of Claim 1.

It is well known that for a reference to anticipate a claim under 35 U.S.C. § 102(b) there must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention (see *Scripps Clinic & Research Foundation v. Genentech Inc.*, 18 USPQ 2d 1001, 1010 (Fed. Cir. 1991)). The application of Haeberle et al. by the Office fails to meet this criteria, and amended Claim 1 is allowable over Haeberle et al.

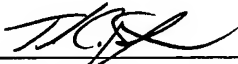
Claims 2 and 3 are allowable as being dependent from an allowable claim.

Applicants respectfully request reconsideration and withdrawal of the rejection of Claims 1-3 under 35 U.S.C. § 102(a) as being anticipated by Haeberle et al.

3. For the foregoing reasons, Applicants respectfully submit that the present application is in condition for allowance. If such is not the case, the Examiner is requested to kindly contact the undersigned in an effort to satisfactorily conclude the prosecution of this application.

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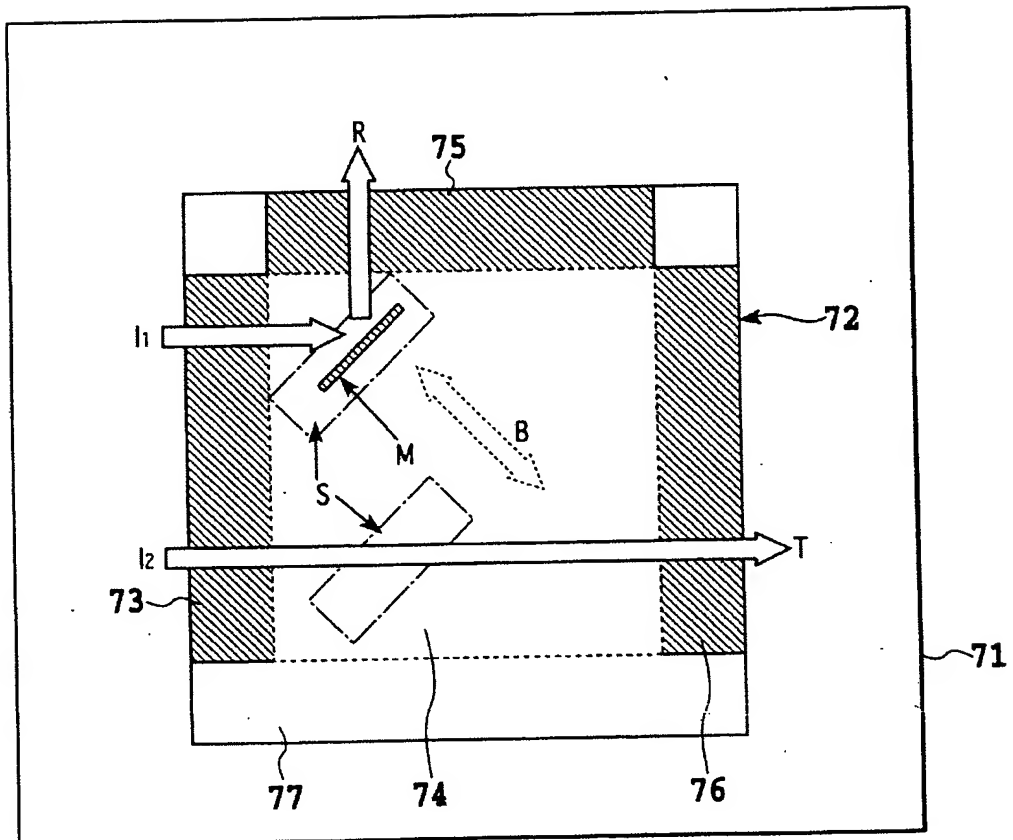


FIG. 1

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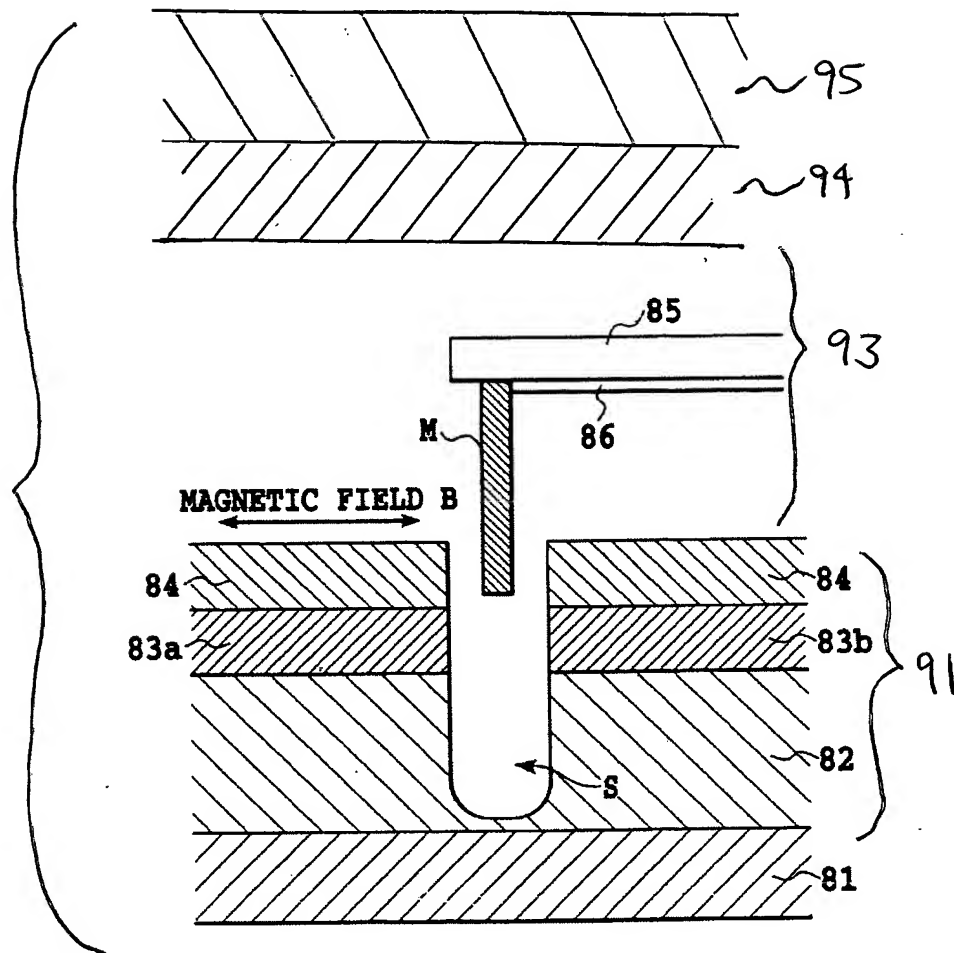
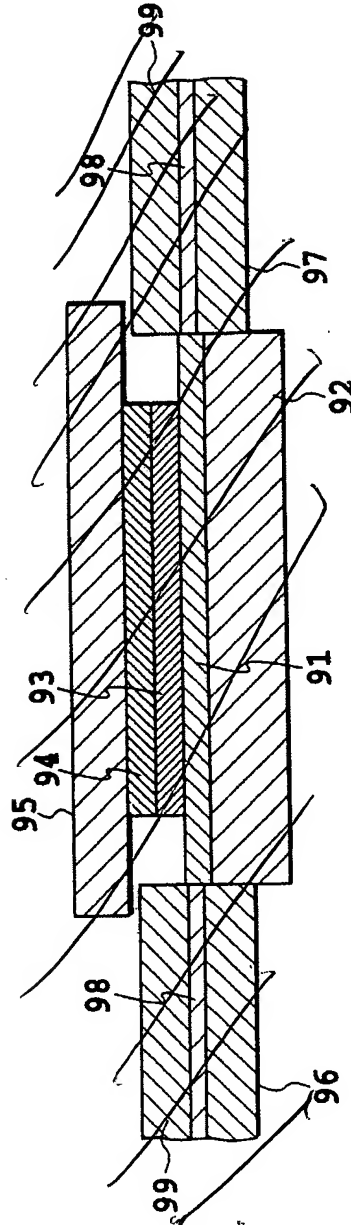


FIG.2

3/13

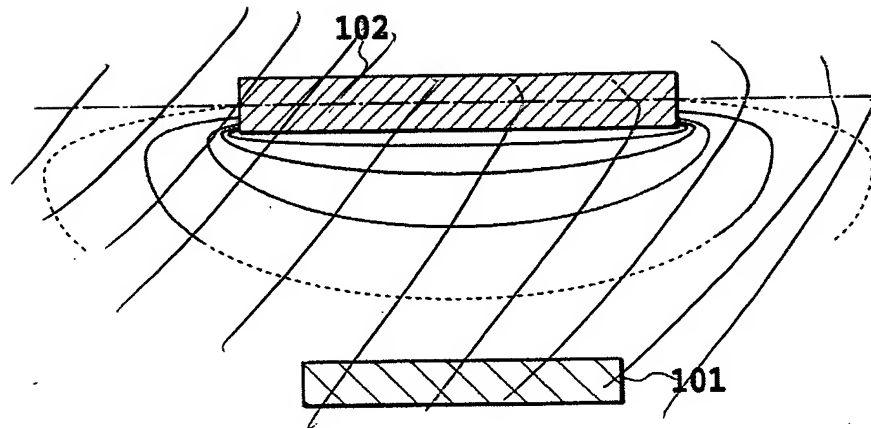
DELETE FIG. 3



~~FIG. 3~~

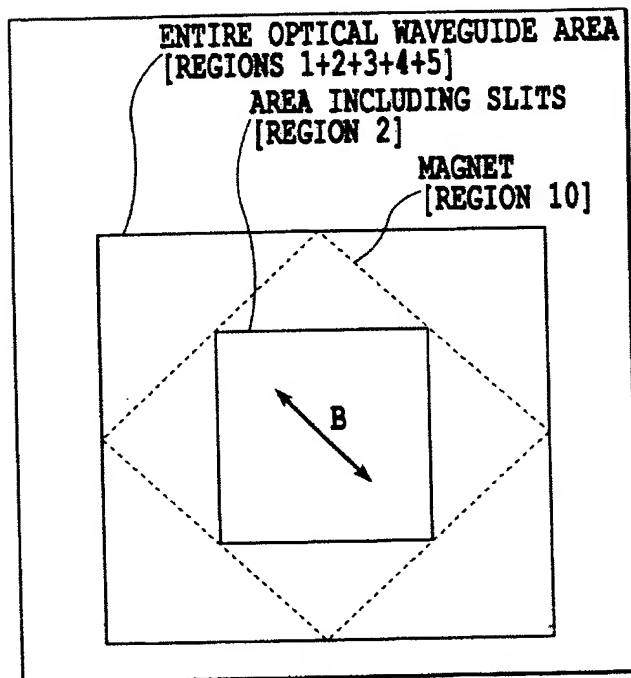
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DELETE FIG. 4



~~FIG. 4~~

~~5/13~~



~~FIG. 5~~ 3

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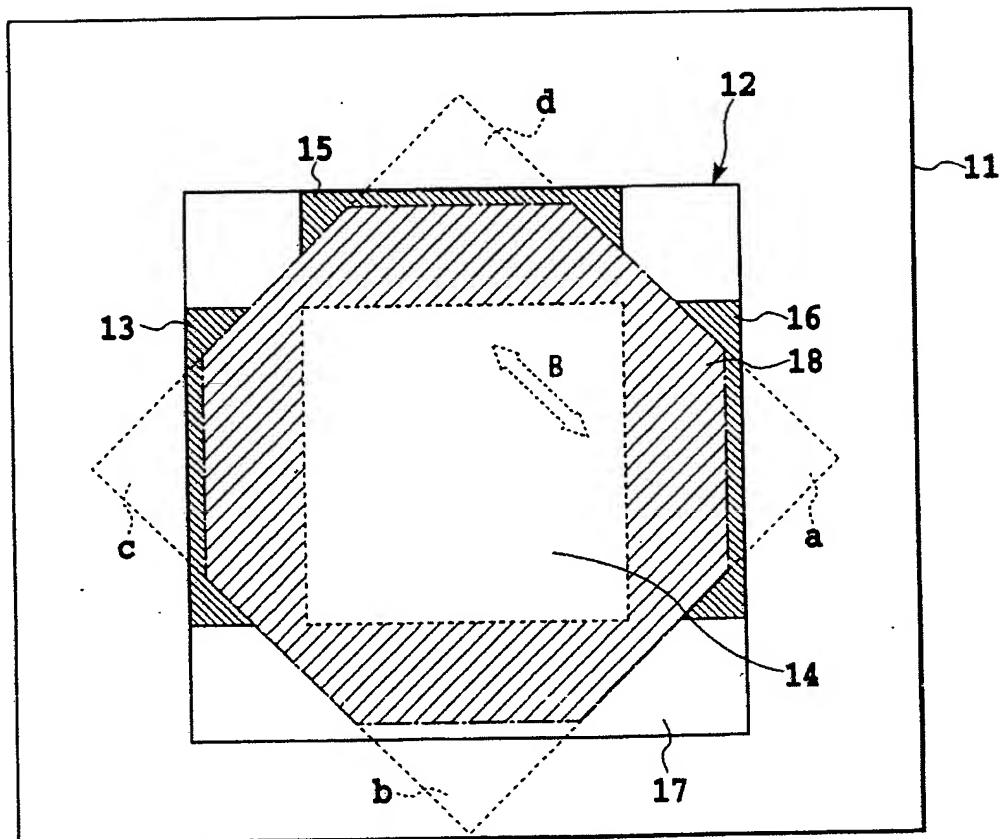


FIG. 6 4

M3

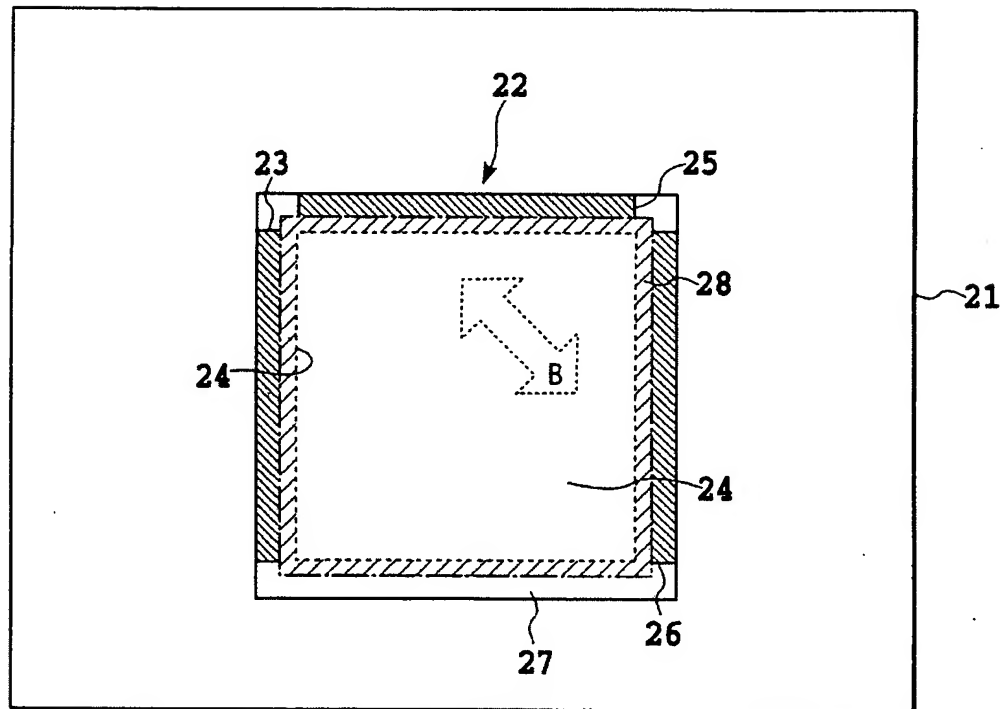


FIG. 7S

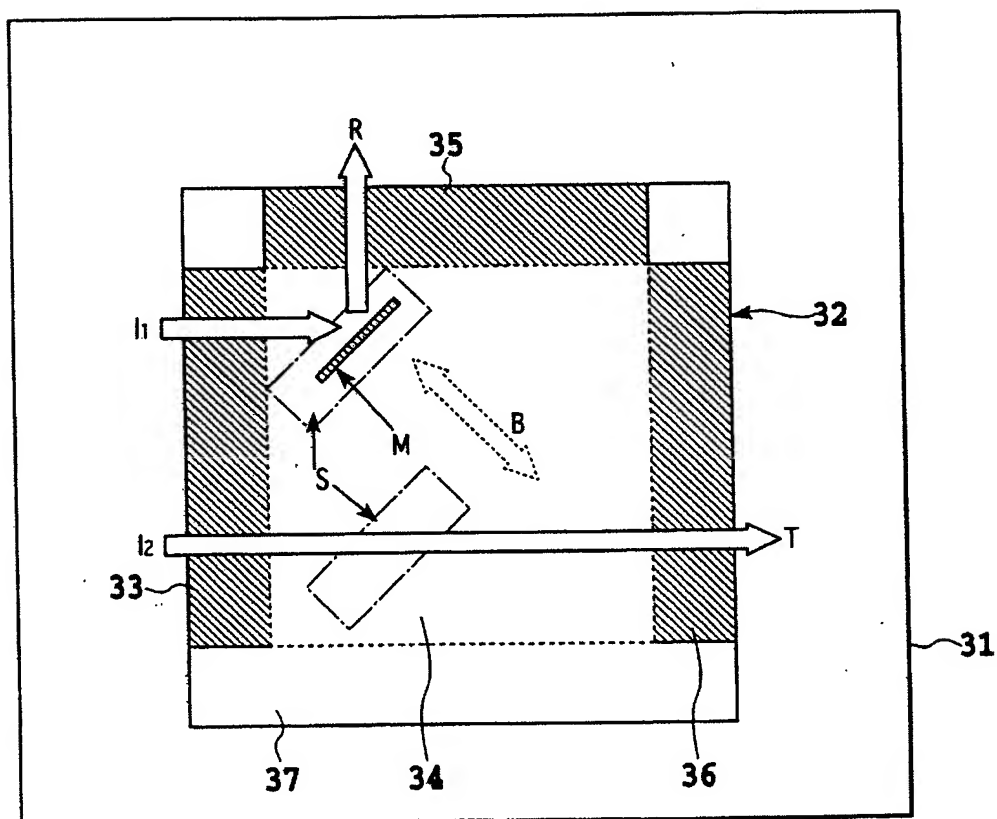


FIG. 8

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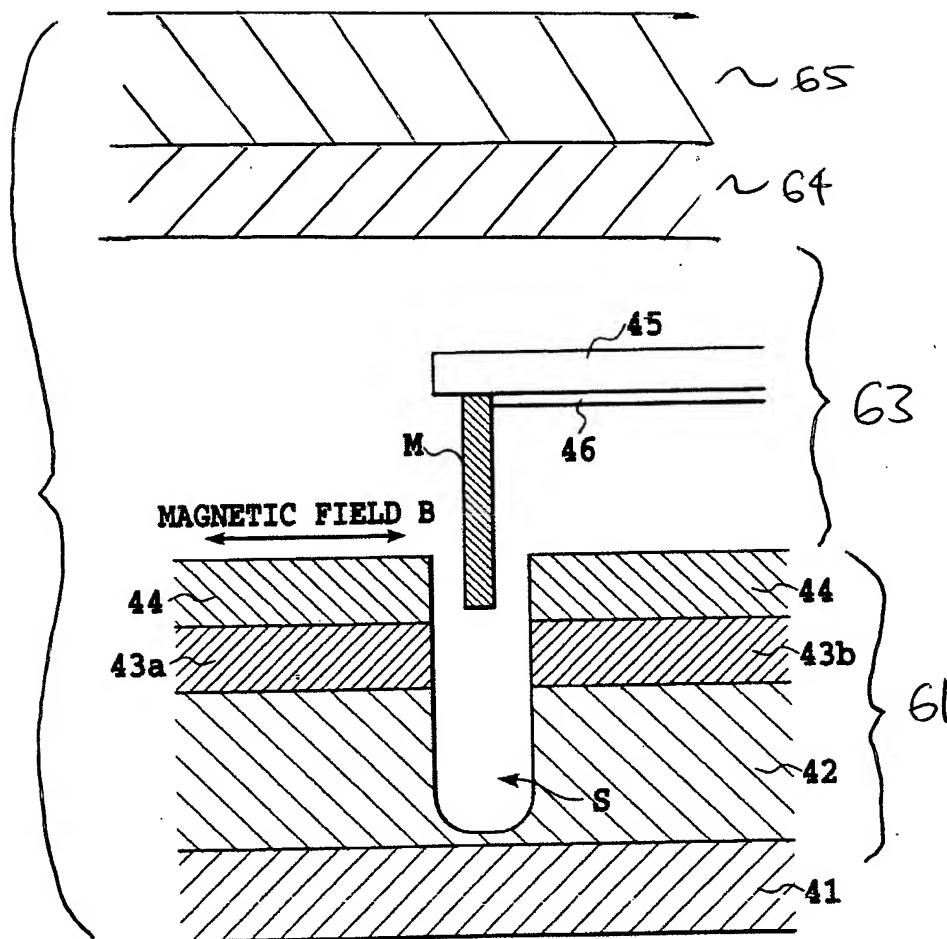


FIG. 9 7

~~10113~~

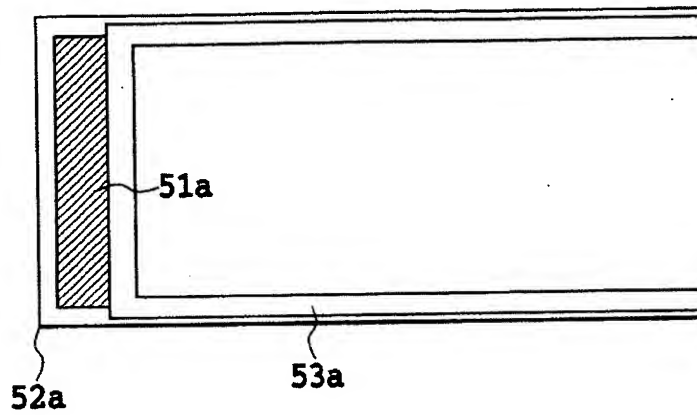


FIG. ~~10A~~ 8A

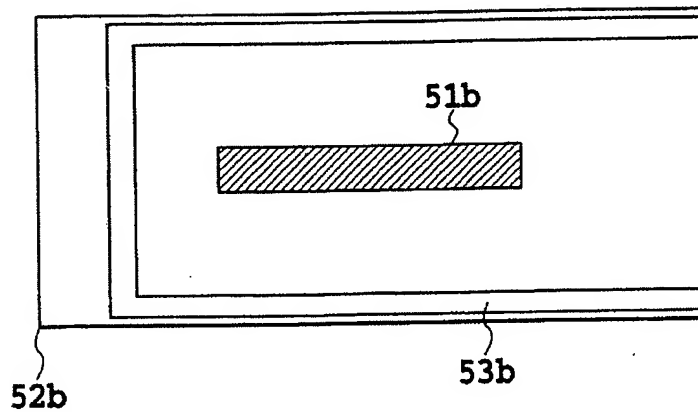
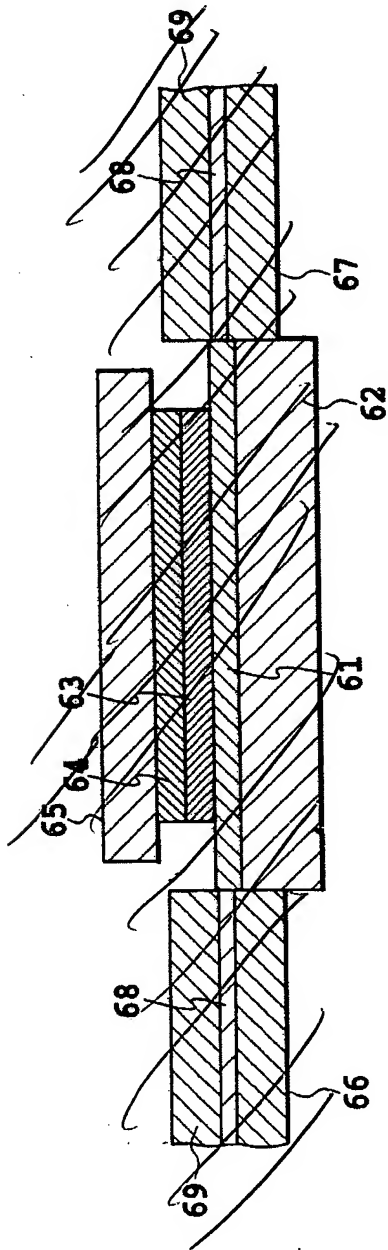


FIG. ~~10B~~ 8B

11/13

DELETE FIG. 11



~~FIG. 11~~

12/13

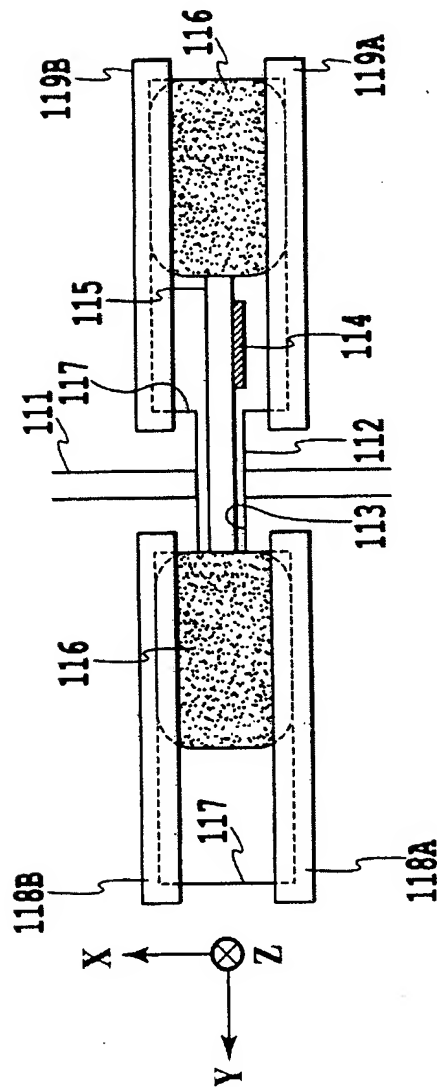


FIG. 12 9

~~13113~~

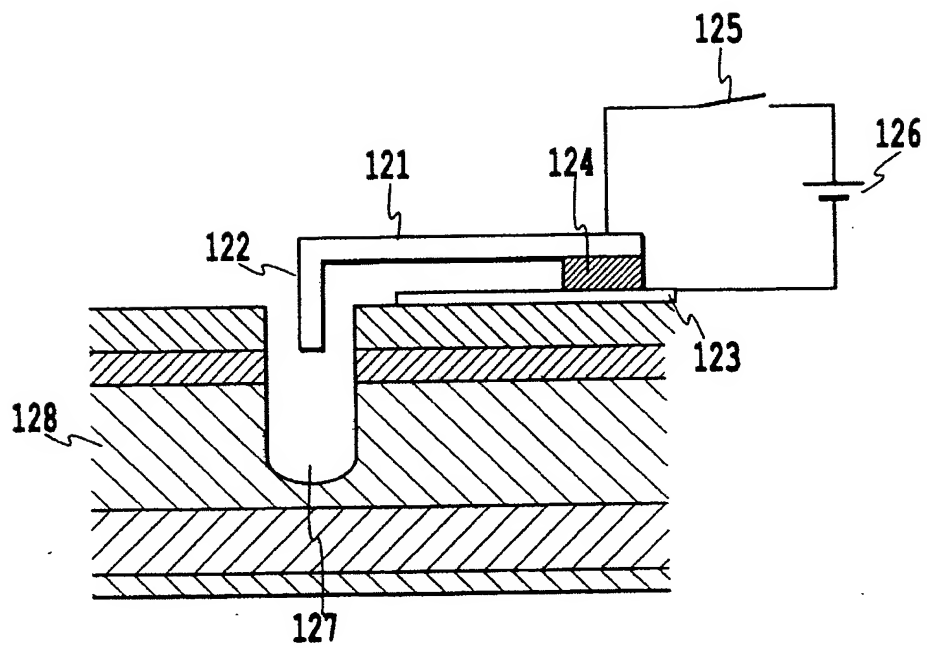


FIG. 13 10